ATTACHMENT 6

MONITORING, ASSESSMENT, AND PERFORMANCE MEASURES

The proposed project will implement monitoring, assessment and performance measures to meet the project's intended goals, achieve measurable outcomes, provide value to the State of California and comply with the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan).

The following existing beneficial uses of the receiving waters in the Basin Plan are: navigation; water contract recreation; non-water contact recreation; commercial and sportfishing; preservation of biological habitats of special significance; wildlife habitat; rare, threatened or endangered species; spawning, reproduction and development; marine habitat; shellfish harvesting; and estuarine habitat.

Both numeric and narrative water quality objectives are listed in the Basin Plan for these beneficial uses. Additional numeric water quality objectives are provided in the CTR for toxic chemicals. The waterbody type of the Basin Plan considered to be applicable for the project is enclosed bays and estuaries, because the Basin drains to this waterbody type. The following monitoring, assessment and performance measures are consistent with the Basin Plan.

I. Performance measures that will be used to quantify and verify project performance

The performance measures that will be used to determine the effectiveness of the project will include the following:

- Basin Storage Enhancement – The project will provide increased flood protection to surrounding neighborhoods and downstream areas by reducing the likelihood of overtopping of the basin during storm events by steepening the side slopes of the basin and removing the existing island. The grading changes to the basin provides for additional storage volume. The additional storm volume, coupled with the new pump station pumping the base stormwater flows, will allow for enhanced basin storage of the peak stormwater flows. The increase storage volume of the regraded basin can be verified by surveying during grading to measure the performance of the increased flood protection to surrounding neighborhoods and downstream areas. The project included the export of about 150,000 of sediment.

- New Stormwater Pump Station – Three axial flow stormwater pumps will be installed within a wet well to work in tandem with the basin storage enhancement. The stormwater pumps will discharge the peak stormwater runoffs retained within the enhanced basin. The three pumps will have a peak combined total discharge capacity of 460 cubic feet per second, which will provide 100-year flood protection to surrounding neighborhoods and downstream areas and allows the upstream watershed to drain properly. The discharge flow rates of each pump can be measured during operation to verify the performance of pump station capacity.

- Backup Power and Fuel System – To avoid the possibility of interrupted service in power or fuel to the new pump station building, especially during a large storm events when the performance of the project is most necessary, the project will be equipped with a back-up redundant source of power to allow continuous power to the main pump engines, low flow sump pumps and pump station electrical system. Adding power redundancy to the pump station will reduce the possibility of the pump station not meeting the performance

of the flood protection component of the project. Testing of the backup generator and 2000 gallon reserve propane will be the measurement for performance of the backup power and fuel system.

- Low Flow Sump Pumps – Low flow sump sumps will be used during the winter season to allow small amounts of discharge to the downstream East Garden Grove Wintersburg Channel when the basin reaches a predetermined elevation. The low flow during the winter season is nuisance flow from the 96-inch Oertly storm drain discharging into the basin and the upstream East Garden Grove Wintersburg Channel (facility C05) upstream of the basin. By the low flow sump pumps discharging the periodic low flows, the basin is maintained during the winter season at a prescribed elevation in anticipation for the much larger storm events and main pump discharges. Maintaining the prescribed elevation throughout the winter season and outside of storm events measures the performance of the low flow sump pumps.

- Trash Rack – A new trash and debris rack will be placed over the entire pump station inlet apron to mitigation obstruction to the main and low flow stormwater pumps, thus maintaining the pump stations efficiency and capacity. The trash rack will include a paved maintenance ramp to allow removal of collected trash and debris before and after storm events. When the ramp becomes inaccessible due to the water surface elevation of the basin, trash booms will be utilized to remove any obstructions. A crane will be on standby for all of Orange County's large pump station to remove debris captured by the trash rack if it impacts the pump station operation during a storm. Observed trash and debris collected at the trash rack and maintained pump efficiency and capacity measure the performance of the trash rack.

- Ecosystem Restoration – The riparian zone of the basin's newly steepened side slopes will be planted with a robust assortment of California native riparian vegetation. The existing basin slopes consist of non-native turf grass. The ecosystem restoration will provide an ecological benefit to the project by creating valuable riparian habitat. The constructed acreage of native riparian plants that can demonstrably support habitat for wildlife can measure the performance of the project's ecosystem restoration.

- Water Quality Treatment – The basin invert will be deepened by 4 feet to allow a longer time for heavy metals attached to sediment transported from tributary runoff to settle into the basin bottom. This will reduce the amount of suspended heavy metals that are transported to downstream receiving waters. Water quality samples taken before and after construction of the project measure the performance of the deepened basin.

II. Monitoring system to be used to verify project performance with respect to the project benefits or objectives, where the data will be collected and the types of analysis to be used

Through the County's administration of the project's construction contract, the County will provide a project assessment plan and monitoring plan to ensure the basin enhancement is performed in a manor that is consist with the project's construction plans. The steepened side slopes, removed island, and deepened basin will be verified by several topographic surveys that, when compared to pre-project topographic surveys, will verify the construction of the basin has been performed in accordance with the construction plans.

The main and low flow sump pump on-off activation will be preprogrammed using a central control panel housed within the pump station building. This will allow the pumps to activate

when the water surface in the basin reaches a certain elevation that require pumping for flood protection in the winter season. The pump station will utilize a Supervisory Control And Data Acquisition (SCADA) system to record the flow rates and water surface elevations within the wet well of both the main and low flow sump pumps. The SCADA system allows operations and maintenance personal to evaluate on-site conditions remotely and reach appropriately. The SCADA system will also record fuel and power consumption and alert when there is an interruption and an alternative fuel or power source is utilized.

Through the County's own administration of the construction contract, the construction and proper performance of the backup power and fuel system will be evident in the County inspector's documentation in the record drawings and testing of equipment installed.

The monitoring system to be used for the planting of the riparian habitat will consist of the County's development of a Habitat Mitigation and Monitoring Program (HMMP) which will require specific vegetation coverage and density throughout the first 5-years after planting. The HMMP will also include specific reporting requirements to the Resource Agencies responsible for permitting the project until sustainable habitat consistent with the Resource Agency permit conditions are achieved. The monitoring and reporting will be performed by a qualified biologist.

III. How monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan

The Project is consistent with the following IRWM Plan objectives:

- Manage rainfall as a resource
- Ensure high quality water for all users
- Preserve and enhance the environment

Monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan. The project will provide enhanced flood protection by providing increased flood control capacity through the use of the additional storage volume of the basin coupled with the new stormwater pump station. This component of the project will help manage rainfall as a resource by increasing flood protection to the community. Water surface elevations within the basin and pump station wet will be recorded by the data logger which will then be used to verify the basin's increased storage capacity for the 100-year storm event. Main and low flow stormwater pump activation levels are also recorded along with pump flow rates to measure the performance in meeting IRWM Plan objection for managing rainfall as a resource.

Monitoring the establishment of the created riparian habitat will provide enhanced ecological function of open-space along the newly graded side slopes of the basin. The aggressive monitoring and reporting program established in the HMMP will help meet the IRWM Plan objections by providing enhanced environmental benefits.

Water quality monitoring data from data collected prior to project initiation will be compared to water quality data collected post-project completion to assess improvements in water quality. The project water quality monitoring data will track progress achieving the IRWM Plan goals and objectives.

PROJECT PERFORMANCE MEASURES TABLES

1. HASTER RETARDING BASIN AND PUMP STATION PROJECT

Project Goals	Desired Outcomes	Output Indicators – Measures to Effectively Track Output	Outcome Indicators – Measures to evaluate change that is a direct result of the work	Measurement Tools and Methods	Targets – Measurable targets that are feasible to meet during the life of the Proposal
1. Basin storage capacity	Increase retarding basin storage volume	Topographic surveys	Compare pre and post project topographic data	Survey equipment before, during and after construction	Increase basin storage capacity to provide increase flood protection
2. Provide increased flood protection	Provide up to 460 cubic feet per second of stormwater pump capacity	Recorded pump flow rates	Recorded water surface elevations within pump station wet well	Pump station data logger and SCADA system	Provide for the 100-year flood protection
3. Water quality treatment	Reduce suspended heavy metals discharged downstream of project	Water quality sampling	Compare pre and post project water quality sampling	Water quality lab results	Improved water quality
4. Ecosystem Restoration	Create 1 acres of high value riparian habitat	Transect surveys of percent coverage	Sustained plant coverage without the use of artificial irrigation	Visual inspection and transect measurements every 50-ft along the perimeter of the basin slopes	Sustainable high value riparian habit